

WHAT IS CLAIMED IS:

1. A power transmission equipped with a continuously variable ratio-change mechanism and a fixed ratio rotational transmission mechanism, which transmit a rotational driving force of an input shaft rotationally driven by a drive source to an output shaft with a speed ratio change;

wherein:

said continuously variable ratio-change mechanism transmits a rotation from said input shaft to a middle shaft at a continuously variable speed change ratio; and

said fixed ratio rotational transmission mechanism comprises a first rotational transmission gear train, a second rotational transmission gear train and a third rotational transmission gear train, said first rotational transmission gear train transmitting the rotation of said input shaft to said middle shaft, said second rotational transmission gear train transmitting the rotation of said middle shaft to said output shaft, and said third rotational transmission gear train transmitting the rotation of said input shaft to said output shaft.

2. The power transmission as set forth in claim 1,
wherein:

said first rotational transmission gear train comprises an input drive gear, which is provided on said input shaft, an idler gear, which is provided on an idler shaft and meshes with said input drive gear, and a forward driven gear, which is provided on said middle shaft and meshes with said idler gear; and

said third rotational transmission gear train comprises said input drive gear, said idler gear and a reverse driven gear, which is provided on said output shaft and meshes with said idler gear.

3. The power transmission as set forth in claim 1, wherein:

first clutching means, which makes the rotation of said input shaft be transmitted through said continuously variable ratio-change mechanism to said middle shaft and then through said second rotational transmission gear train to said output shaft, is provided on said input shaft;

second clutching means, which makes the rotation of said input shaft be transmitted through said first and second rotational transmission gear trains to said output shaft, is provided on said middle shaft; and

third clutching means, which makes the rotation of said input shaft be transmitted through said third rotational transmission gear train to said output shaft, is provided on said output shaft.

4. The power transmission as set forth in claim 3, wherein:

said continuously variable ratio-change mechanism comprises a drive pulley, which is provided on said input shaft, a driven pulley, which is provided on said middle shaft, and a V belt, which is disposed around said drive pulley and said driven pulley; and

said first clutching means is provided on said input shaft and positioned on a back of a stationary pulley half that constitutes

said drive pulley, so that said first clutching means can engage and disengage said drive pulley to and from said input shaft.

5. The power transmission as set forth in claim 3, wherein:

said continuously variable ratio-change mechanism comprises a drive pulley, which is provided on said input shaft, a driven pulley, which is provided on said middle shaft, and a V belt, which is disposed around said drive pulley and said driven pulley;

said drive pulley is equipped with a drive oil chamber that controls a pulley width of said drive pulley; and

said drive oil chamber and at least part of said third clutching means, which is provided on said output shaft, are positioned substantially in a common plane that is perpendicular to axes of said shafts.

6. The power transmission as set forth in claim 3, wherein:

a coupling rotational mechanism for transmitting the rotational driving force of said drive source to said input shaft is provided on said input shaft at an end thereof facing said drive source;

a hydraulic oil delivery portion is provided between said coupling rotational mechanism and said first rotational transmission gear train on said input shaft, said hydraulic oil delivery portion being where hydraulic oil is delivered from a housing side to an oil passage that is provided extending axially in said input shaft; and

said hydraulic oil delivery portion and said second

clutching means, which is provided on said middle shaft, are positioned substantially in a common plane that is perpendicular to the axes of said shafts.

7. The power transmission as set forth in claim 1, wherein:

said continuously variable ratio-change mechanism comprises a drive pulley, which is provided on said input shaft, a driven pulley, which is provided on said middle shaft, and a V belt, which is disposed around said drive pulley and said driven pulley;

said first rotational transmission gear train is positioned toward a back of a drive oil chamber, which is provided on a side of said drive pulley to control the pulley width thereof;

said second rotational transmission gear train is positioned between said driven pulley and said first rotational transmission gear train on said middle shaft; and

said second rotational transmission gear train and said drive oil chamber are positioned substantially in a common plane that is perpendicular to the axes of said shafts.

8. The power transmission as set forth in claim 7, wherein:

a housing that accommodates said continuously variable ratio-change mechanism and said fixed ratio rotational transmission mechanism comprises a first accommodation room, which accommodates said continuously variable ratio-change mechanism and a drive gear of said second rotational transmission gear train, and a second accommodation room, which accommodates said fixed

ratio rotational transmission mechanism except the drive gear of said second rotational transmission gear train; and

the drive gear of said second rotational transmission gear train meshes with a driven gear of said second rotational transmission gear train through an opening provided in a partition wall that partitions said housing into said first accommodation room and said second accommodation room.

9. The power transmission as set forth in claim 1, wherein:

said first rotational transmission gear train comprises an input drive gear, which is provided on said input shaft, a first idler gear, which is provided on an idler shaft and meshes with said input drive gear, a second idler gear, which is provided on said idler shaft, and an input driven gear, which is provided on said middle shaft and meshes with said second idler gear;

said second rotational transmission gear train comprises said input driven gear and a forward driven gear, which is fixed on said output shaft and meshes with said input driven gear; and

said third rotational transmission gear train comprises said input drive gear, said first idler gear and a reverse driven gear, which is provided on said output shaft and meshes with said first idler gear.

10. The power transmission as set forth in claim 9, wherein:

said first idler gear is provided rotatably on said idler shaft;

second clutching means, which engages and disengages said first idler gear to and from said idler shaft, is provided on said idler shaft;

said reverse driven gear is provided rotatably on said output shaft; and

third clutching means, which engages and disengages said reverse driven gear to and from said output shaft, is provided on said output shaft.

11. The power transmission as set forth in claim 1, wherein:

said first rotational transmission gear train comprises an input drive gear, which is provided on said input shaft, a first idler gear, which is provided on an idler shaft and meshes with said input drive gear, a second idler gear, which is provided on said idler shaft, and an input driven gear, which is provided on said middle shaft and meshes with said second idler gear;

said second rotational transmission gear train comprises said input driven gear and a forward driven gear, which is provided on said output shaft and meshes with said input driven gear; and

said third rotational transmission gear train comprises said input drive gear, said first idler gear, a third idler gear, which is provided on said idler shaft, and a reverse driven gear, which is provided on said output shaft and meshes with said third idler gear.

12. The power transmission as set forth in claim 11, wherein:

second clutching means, which engages and disengages

said second idler gear to and from said idler shaft, is provided through a one-way clutch on said idler shaft; and

third clutching means, which engages and disengages said third idler gear to and from said idler shaft, is provided on said idler shaft.